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Lin

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[54] **STEEL WIRE ROPE LOCK**

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[51] **Int. Cl.**[7] **E05B 67/06**

[52] **U.S. Cl.** **70/49**; 70/18

[58] **Field of Search** 70/14, 18, 19, 70/30, 49, 38, 386

[56] **References Cited**

U.S. PATENT DOCUMENTS

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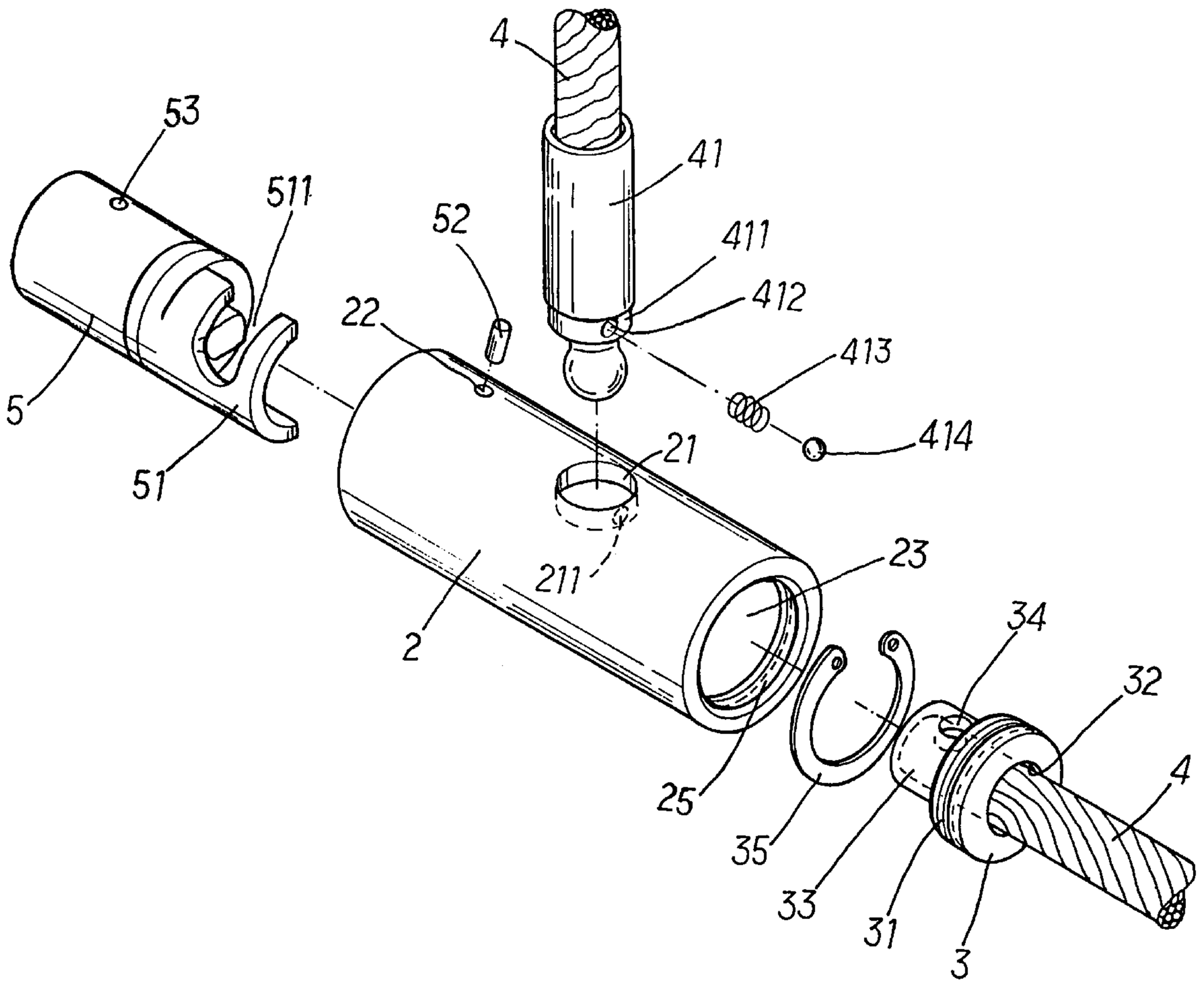
Attorney, Agent, or Firm—Rosenberg, Klein & Lee

[57] **ABSTRACT**

A steel wire rope lock includes a lock housing, a steel wire rope having a first end and a second end, a first end connector for fixing tightly the first end of the steel wire rope, a second end connector for fixing tightly the second end of the steel wire rope and a lock fitted in the lock housing. The first end connector is inserted into the mouth of the lock housing. The lock is inserted in the other end of the lock housing. Then, the second end connector is inserted into the lateral hole of the lock housing, and the steel bead provided half in the round hole of the second end connector is compressed by the inner wall of the lateral hole to withdraw wholly in the round hole. When the second end connector being inserted more downwardly, the steel bead will be pushed outward by the spring in the round hole to be caught in the arc groove. Thus, the second end connector is firmly fixed in the lock housing.

1 Claim, 4 Drawing Sheets



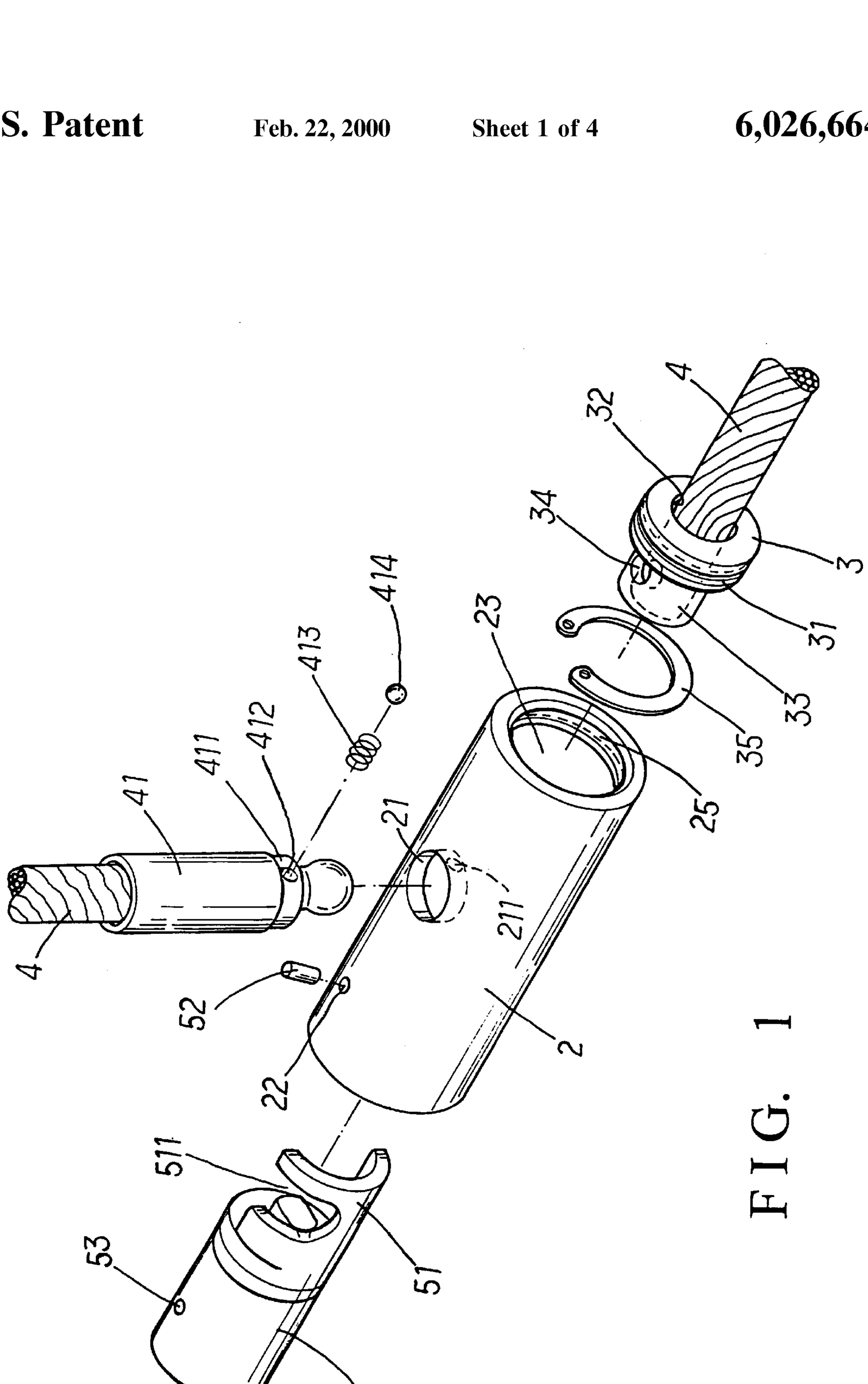


FIG. 1

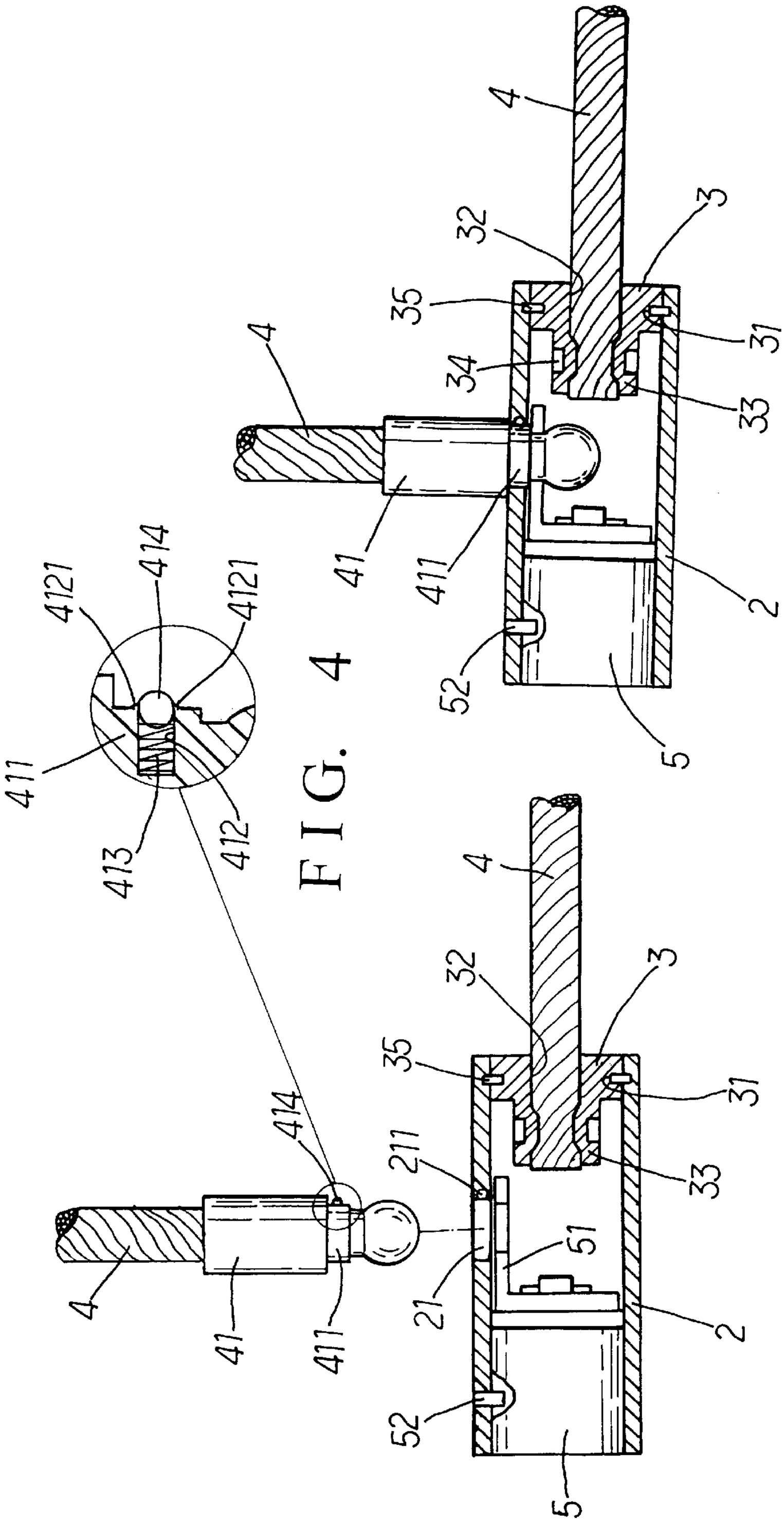


FIG. 3

FIG. 4

FIG. 2

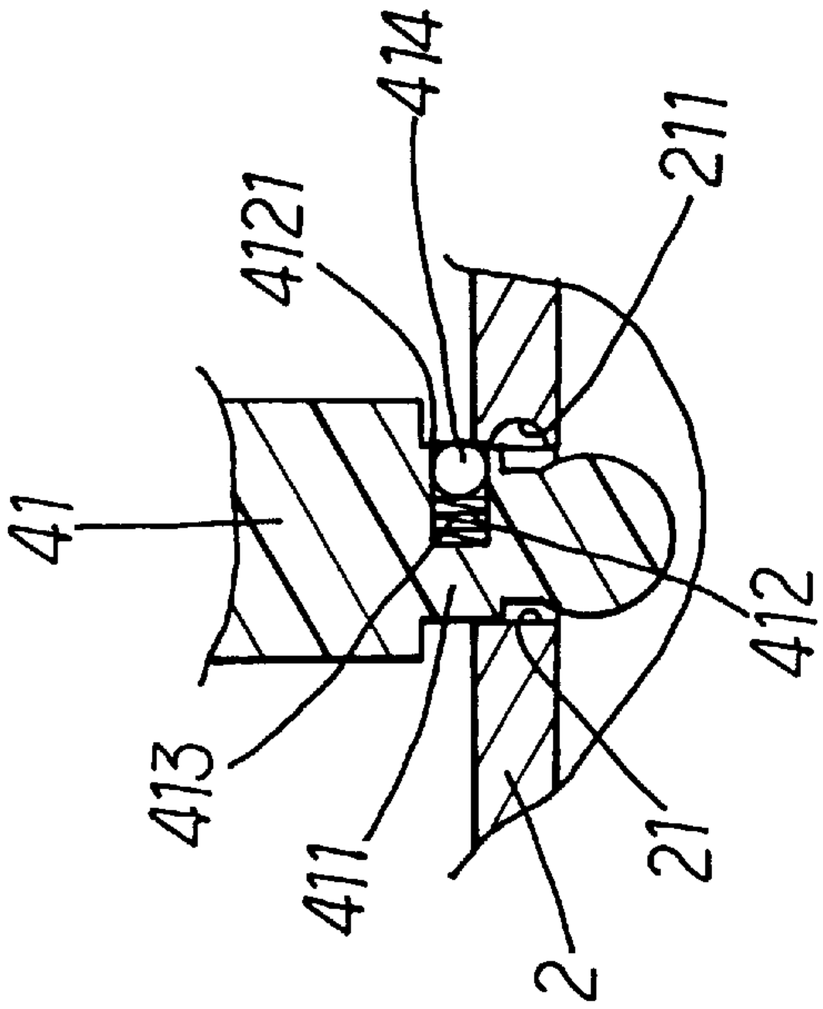


FIG. 6

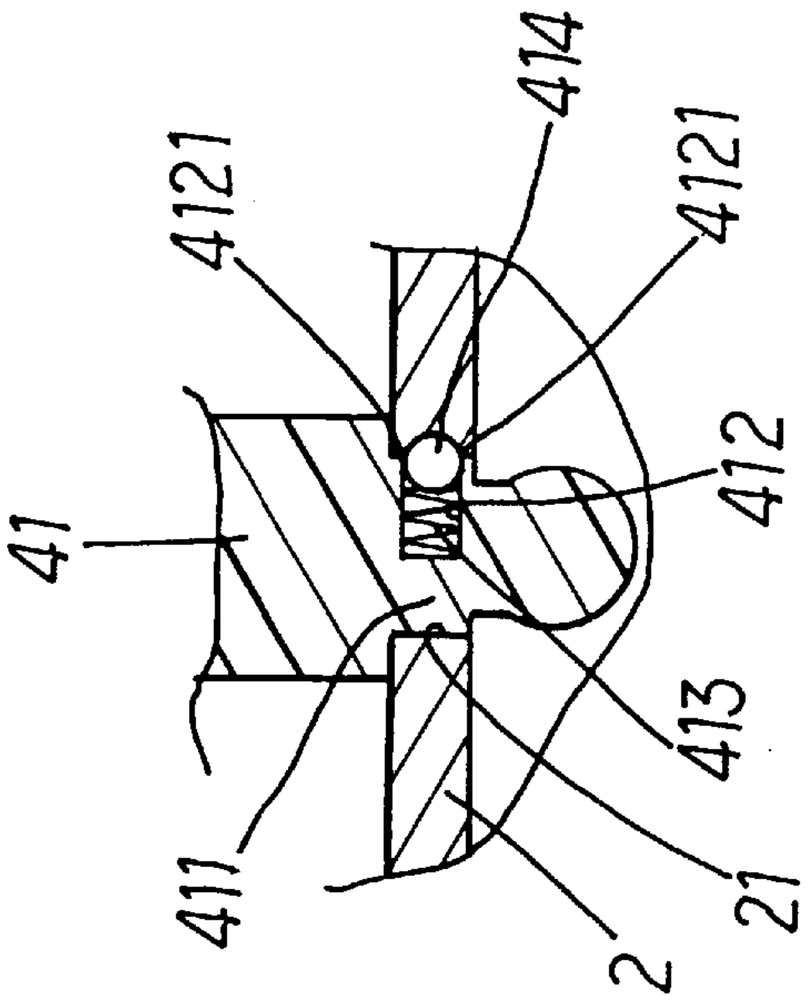


FIG. 7

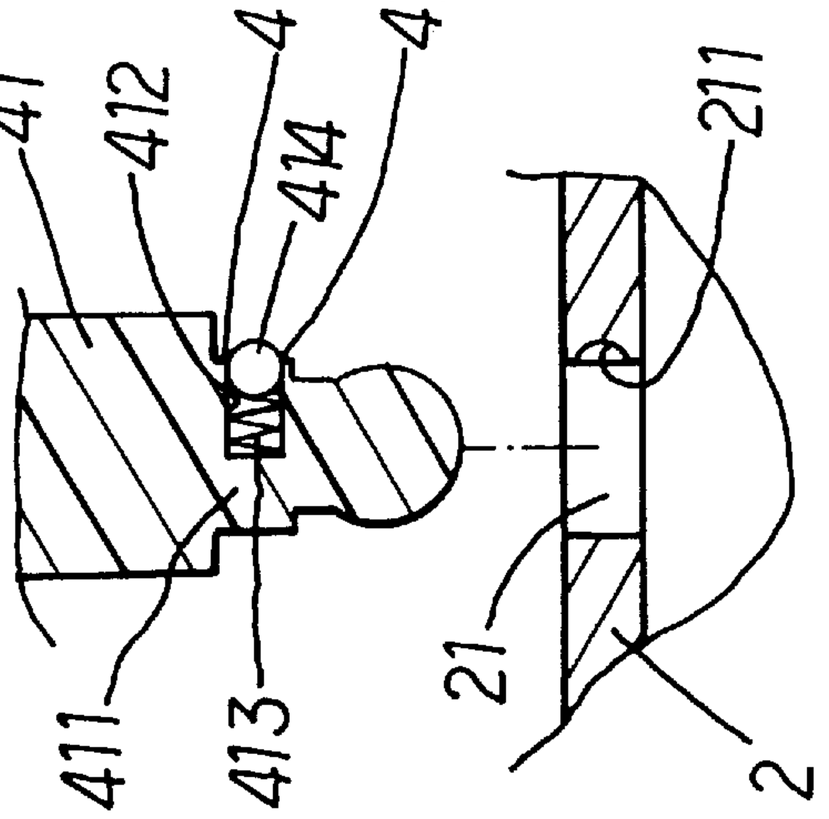


FIG. 5

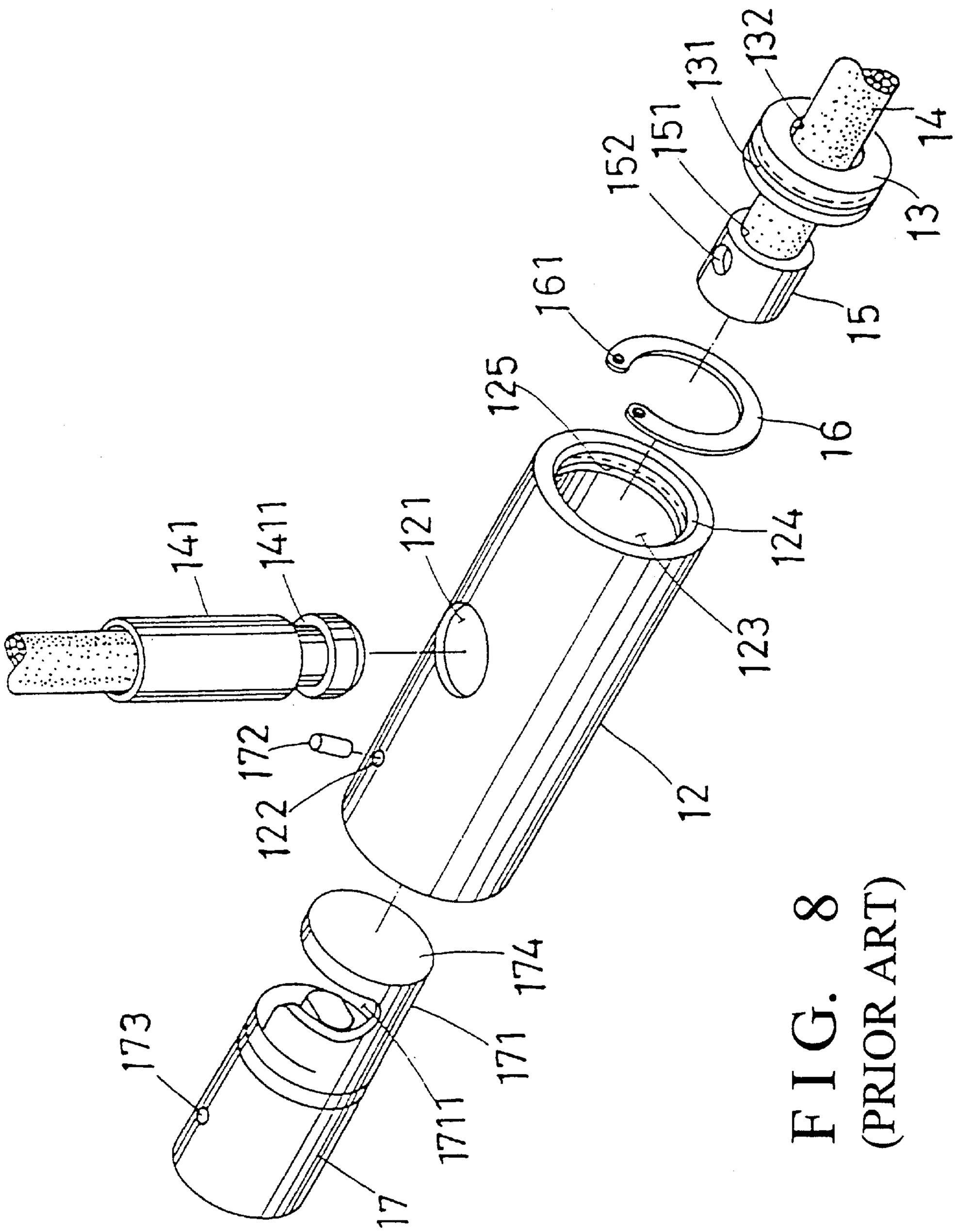


FIG. 8
(PRIOR ART)

STEEL WIRE ROPE LOCK

BACKGROUND OF THE INVENTION

1. Field of the Invention

This invention relates to a steel wire rope lock, which can be easily operated to make the second end connector and the lock housing firmly combined together, particularly to which can prevent the second end connector from easily ejecting by the pulling force of the steel wire rope.

2. Description of the Related Art

A conventional steel wire rope lock with U.S. Pat. No. 5,568,740 is owned by the applicant of the present invention.

Referring to FIG. **8**, the granted prior steel wire rope lock includes a lock housing **12** made of steel tube, a lock **17** fixed in one end portion of the housing **12**, a steel wire rope **14** having one end connected movably with the other end of the housing **12** via a first end connector **15** and an annular member **13** and the other end fixed with a second connector **141**. The second connector **141** is to be fitted in a lateral hole **121** of the housing **12** and able to be kept immovable, i.e. locked by deadbolt **171** having a deep groove **1711** moved up to engage the annular groove **1411** of the second connector **141**. Then, the steel wire rope **14** wound around an object cannot be taken off unless the lock is unlocked with a key.

However, the combining manner of the above-mentioned conventional steel wire rope lock is not perfect enough in use. While being used, the second end connector **141** is fitted in the lateral hole **121** of the middle section of the lock housing **121**. Because there is no catching device to fix the second end connector **141** in the lateral hole **121**,the second end connector **141** and the lock housing **121** must be held by one hand of a user so as not to separate from each other; then, the second end connector **141** is locked in the lock **15** fitted in the lock housing **12** by the other hand of the user. It is neither convenient nor easy to operate.

Moreover, the second end connector **141** is inserted in the lock housing **12** without any catching device so that the second end connector **141** may suddenly eject by the pulling force of the steel wire rope **14** if a user should relax his/her hold. Therefore, the user may be frightened and even hit accidentally.

SUMMARY OF THE INVENTION

Therefore, an objective of this invention is to provide a steel wire rope lock which is convenient and easy to operate.

Another objective of this invention is to provide a steel wire rope lock which can prevent the second end connector from suddenly ejecting by the pulling force of the steel wire rope so as to prevent a user from being frightened and even hit accidentally.

Accordingly, a steel wire rope lock in the present invention includes a lock housing, a steel wire rope having a first end and a second end, a first end connector for fixing tightly the first end of the steel wire rope, a second end connector for fixing tightly the second end of the steel wire rope and a lock fitted in the lock housing. The first end connector is inserted into the mouth of the lock housing, and a resilient C-shaped ring clamping the annular groove is fitted in the dented annular groove of the mouth and half protrusive outside the annular groove. The lock is inserted in the other end of the lock housing and fixed by a pin penetrating the pin holes of the lock housing and the lock. Then, the second end connector is inserted into the lateral hole of the lock housing, and the steel bead provided half in the round hole of the

second end connector is compressed by the inner wall of the lateral hole to withdraw wholly in the round hole. When the second end connector being inserted more downwardly, the steel bead will be pushed outward by the spring in the round hole to be caught in the arc groove. Thus, the second end connector is firmly fixed in the lock housing.

BRIEF DESCRIPTION OF THE DRAWINGS

Other features and advantages of the present invention will become apparent in the following detailed description of the preferred embodiments with reference to the accompanying drawings, in which:

FIG. **1** is an exploded perspective view of a steel wire rope lock in the present invention;

FIG. **2** is a cross-sectional combined view of the steel wire rope lock before the second end connector being locked in the lock housing in the present invention;

FIG. **3** is a cross-sectional combined view of the steel wire rope lock after the second end connector being locked in the lock housing in the present invention;

FIG. **4** is an enlarged cross-sectional view of the second end connector of the steel wire rope lock in the present invention;

FIG. **5** is a cross-sectional view showing the condition of the steel bead of the second end connector before the second end connector being locked in the lock housing of the steel wire rope lock in the present invention;

FIG. **6** is a cross-sectional view showing the steel bead being compressed in the round hole while the second end connector being inserted in the lateral hole of the lock housing of the steel wire rope lock in the present invention;

FIG. **7** is a cross-sectional view showing the condition of the steel bead of the second end connector when being caught in the arc groove of the lateral hole of the lock housing of the steel wire rope lock in the present invention; and,

FIG. **8** is an exploded perspective view of a conventional steel wire rope lock whose U.S. Pat. No. is 5,568,740 and which was invented by the inventor of the present invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

Referring to FIGS. **1**, **2** and **3**, a preferred embodiment of a steel wire rope lock in the present invention is composed by a lock housing **2**, a first end connector **3**, a steel wire rope **4** and a lock **5**.

The lock housing **2** made of a steel tube with a thick wall is provided with a lateral hole **21** in the central portion and a pin hole **22** in one end. An arc groove **211** is provided in the inner wall of the lateral hole **21**. A mouth **23** is provided in the other end of the lock housing **2**, and a dented annular groove **25** is formed on the inner wall of the mouth **23**.

The first end connector **3** is provided with an annular groove **31** on the outer surface for a resilient C-shaped ring **35** to clamp on. A center hole **32** of the first end connector **3** is provided for the first end of the steel wire rope **4** to fit through. An extending portion **33** is protrusive on the front end of the first end connector **3**, and a recess **34** is provided in the extending portion **33**.

The steel wire rope **4** has one end fitted in the center hole **32** of the first end connector **3** and the other end fitted in the second end connector **41**. On the front end of the second end connector **41** is provided with a protruding pole **411** in whose outer wall is provided with a round hole **412** corre-

sponding to the arc groove **211**. The round hole **412** is provided for a spring **413** to be inserted into and then for a steel bead **414** to be inlaid. The steel bead **414** is caught by the upper flange **4121** of the round hole **412** and is prevented from wholly ejecting outward. Thus, the steel bead **414** will always be pushed by the spring **413** and slightly protrude outside the round hole **412**, as shown in FIG. **4**.

The lock **5** is provided with a catch member **51** in one end. The catch member **51** is provided with a deep groove **511**. In the other side of the lock **5** is provided with a pin hole **53** corresponding to the pin hole **22** of the lock housing **2**. A pin **52** is inserted through the pin holes **22** and **53** of the lock housing **2** and the lock **5** so as to secure the lock **5** in the lock housing **2**.

In assembling, the first end connector **3** is inserted into the mouth **23** in one end of the lock housing **2**, and the C-shaped ring **35** clamping on the annular groove **31** is inlaid in the dented annular groove **25** and half protrusive outside the annular groove **31**. The lock **5** is inserted in the other end of the lock housing **2** and secured in the lock housing **2** by the pin **52** penetrating through the pin holes **22** and **53** of the lock housing **2** and the lock **5**. Then, the second end connector **41** is inserted into the lateral hole **21** of the lock housing **2**, as shown in FIG. **5**. When the steel bead **414** being compressed by the inner wall of the lateral hole **21**, the steel bead **414** will withdraw wholly in the round hole **412**, as shown in FIG. **6**. When the second end connector **41** being inserted more downwardly, the steel bead **414** will be pushed outward by the spring **413** and be caught in the arc groove **211**, as shown in FIG. **7**. Thus, the second end connector **41** is secured in the lock housing **2** and then is locked by the lock **5** in the lock housing **2**.

As can be understood from the above description, the steel wire rope lock in the present invention has following merits:

1. It is convenient and easy to operate because the second end connector **41** can be secured in the lock housing **2** by the steel bead **414** being caught in the arc groove **211** in the inner wall of the lateral hole **21** without being held by one hand of a user.
2. The second end connector **41** will not eject outward by the pulling force of the steel wire rope **4** after the lock **5** being unlocked unless the second end connector **41** is pulled out to make the steel bead **414** be out of the arc groove **211**.

While the preferred embodiments of the invention have been described above, it will be recognized and understood that various modifications may be made therein and the appended claims are intended to cover all such modifications which may fall within the spirit and scope of the invention.

What is claimed is:

1. A steel wire rope lock comprising:

a longitudinally extended lock housing formed of a steel tube having a bore extending longitudinally therethrough, said housing having a centrally disposed opening formed through a wall thereof, said opening being circumscribed by an annular edge portion of said wall having an arcuate recess formed therein;

a lock secured within said bore of said housing adjacent one end of said housing, said lock having a catch member extending from an end thereof, said catch member having an elongated opening formed therein in aligned relationship with said opening in said housing;

a steel wire rope having opposing first and second ends, said first end of said wire rope being secured to an end of said housing opposite said lock; and,

a connector coupled to said second end of said steel wire rope and including a protruding pole adapted for passage into said opening of said housing and releasable locking engagement within said elongated opening of said catch member, said protruding pole having a hole formed in a side portion thereof aligned with said arcuate recess of said housing when said connector is disposed in said opening of said housing, said connector including a spring disposed in said hole and a steel bead disposed in said hole adjacent an open end thereof, said steel bead being retained in said hole by a flange portion of said hole and biased against said flange by said spring for extension of a portion of said steel bead from said open end of said hole, said connector being releasably held in said opening of said housing prior to said locking engagement of said protruding pole by said catch member responsive to said steel bead releasably engaging said arcuate recess of said housing when said connector is inserted into said opening of said housing.

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